

3D Animation Standards 2008

3D Animation

Grade Levels: 11-12

Units of Credit: .5

CIP Code: 11.0216

Prerequisites: 3D Graphics

Skill Certification Exam: #819

Course Description

3D Animation is a one semester using 3D graphics software to produce 3D models and animations. This course will introduce students to 2D and 3D, animation planning, storyboard development, and the animation process.

Course Standards and Objectives

Standard 01 Students will identify the applications of 3D graphics and animation through exploring the career opportunities and the relevant history of the industry.

Objectives

- 0101 Identify various applications of 3D graphics and animation, such as:
 - Entertainment
 - Health Sciences
 - Architecture and Engineering
 - Aerospace
 - Advertising
- 0102 Develop career awareness related to working in the 3D graphics and animation industry.
 - Identify personal interests and abilities related to 3D Graphics careers
 - Identify personal creative talents
 - Identify organizational and leadership skills
 - Identify special interest areas
 - Identify 3D graphics and animation job titles, such as: Animator, Technical Director, Rigger, 3D Modeler, Lighter, Texture Artist, Special Effects
 - Investigate career opportunities, trends, and requirements related to 3D graphics and animation careers
 - Identify the members of a 3D graphics and animation team:
 - Investigate trends associated with 3D graphics and animation careers
 - Develop a realistic Student Education Occupation Plan (SEOP) to help guide further educational pursuits
 - Identify factors for employability and advancement in 3D careers
 - Survey existing 3D graphics and animation businesses to determine what training is required
 - Survey universities and colleges to determine programs, degrees and training availability
 - Develop employability competencies/characteristics: responsibility, dependability, ethics, respect, and cooperation
 - Achieve high standards of personal performance with a positive work ethic and attitude

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0103 Discuss the relevant history of the 3D graphics & animation industry. (See PowerPoint)

- Early 2D animations on film
- Key mile markers in animation
- Key figures and animators in animation history

Standard 02 *Students will create a basic 3D model as an introduction to the 3D development process. (Covered in 3D Modeling)*

Standard 03 *Students will model 3D objects. (Covered in 3D Modeling)*

Standard 04 *Students will apply surface materials to 3D models. (Covered in 3D Modeling)*

Standard 05 Students will apply lighting and camera techniques to achieve intended effects.

Objectives

0501 Review pertinent terminology.

0502 Apply lighting effects.

- Basic three point lighting for artistic effect: key, fill, rim
- Other realistic lighting: indoor, outdoor, mood, artistic, etc.
- 3D specific lighting sources
 - Global/Image Based
 - Directional
 - Spot Lights
 - Shadows/Shading
 - Point Light

0503 Apply camera effects.

- Aspect Ratio/Film Back
- Setting and modifying camera views
 - Staging and Manipulating
 - Truck
 - Pan
 - Zoom
 - Dolly

Standard 06 Students will animate 3D models.

Objectives

0601 Introduce pertinent terminology.

0602 Introduce and/or apply the mechanics of animation.

- Frame Rate
- Keyframing
- Path Animation
- Cycle Animation
- Pivot/Origin Points
- Forward Kinematics Inverse Kinematics (FKIK) Constraints
- Editing Timeline
- Rigging

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- 0603 Introduce various animation effects.
- Particle Systems
 - Environmental Simulation: Wind, Gravity, Time
 - Other software specific effects.
- 0604 Introduce and apply the principles of animation.
- Concept drawing
 - Character Appeal
 - Anticipation: Action/Reaction
 - Exaggeration
 - Squash and Stretch
 - Timing/Spacing
 - “Straight Ahead” and “Pose to Pose”: Keyframes, In betweens, Break downs
 - Staging: How to set up a scene, Camera placement, How to tell the story
 - Overlap, drag and follow through
 - Arcs
 - Slow in, Slow out
 - Secondary Actions: Things happening on peripherals

Standard 07 *Students will render 3D models. (Covered in 3D Modeling)*

Standard 08 Students will demonstrate the process of creating 3D animation.

Objectives

- 0801 Introduce Pertinent Terminology.
- 0802 Demonstrate the animation process.
- Project Brief
 - Story
 - Script writing
 - Style
 - Story Conceptualization
 - Character, Set and Prop Design: Genre, Color/Value, Mood (light), Clothing, Vehicles, Architecture
 - Storyboards
 - Dialog Recording
 - Animatic/Story Reel
 - Scene Blocking
 - Modeling
 - Rigging
 - Mapping/Texturing
 - Lighting
 - Animating
 - Rendering
 - Effects
 - Compositing